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ROCKET- AND AIRCRAFT-BORNE TRACE GAS MEASUREMENTS IN THE WINTER POLAR STRATOSPHERE

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In January and February 1987 we have performed stratospheric rocket- and aircraft-borne trace gas measurements in the North Polar region using ACIMS (Active Chemical Ionisation Mass Spectrometry) and PACIMS (PAssive Chemical Ionisation Mass Spectrometry) instruments. The rocket was launched at Esrange (European Sounding Rocket Launching Range) (68° N, 21° E, Northern Sweden) and the twin-jet research aircraft operated by the DFVLR (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt) and equipped with our mass spectrometer laboratory was stationed at Kiruna airport. Various stratospheric trace gases were measured including also nitric acid, sulfuric acid, non-methane hydrocarbons (acetone, hydrogen cyanide, acetonitrile, methanol etc.), and ambient cluster ions.

The experimental data will be presented and possible implications for polar stratospheric ozone will be discussed.